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Sweet Potato Vine

SILAGE

THE AGRICULTURAL EXPERIMENT STATION
OF THE
NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING
AND
BUREAU OF AGRICULTURAL AND INDUSTRIAL CHEMISTRY,
AGRICULTURAL RESEARCH ADMINISTRATION OF THE UNITED STATES
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SWEET POTATO VINE SILAGE¹

¹ North Carolina Agricultural Experiment Station and Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, United States Department of Agriculture.

CONSERVATION OF FEED CROPS ESSENTIAL

The meat and dairy industries in the South can expand no faster than feeds are made available. For this reason, every effort should be made to conserve and use all available feed crops. This is particularly true for sweet potato vines, since thousands of tons are wasted in southern growing areas each year.

The green weight yield per acre of sweet potato vines, at the time the crop is harvested, is greater than the yield of green corn for silage. Yet, there has been very little use of sweet potato vines as a principal stock feed. Recent feeding trials made at the North Carolina Agricultural Experiment Station have shown that good silage can be made from sweet potato vines, or a mixture of vines and roots. In fact, this silage has been shown to be as good as corn silage for feeding dairy cattle.

CULL OR SURPLUS POTATOES USED

In these tests the sweet potato vines were pulled by hand* and chopped with an ensilage cutter. Three silos were filled in the usual manner. One contained vines alone; a second, a mixture of vines and roots, in the proportion of 300 pounds of roots per ton of vines; and a third, vines and molasses, at the rate of 60 pounds of molasses per ton of vines. The use of sweet potato roots in the silage provides a means of using cull or surplus potatoes for which there is no market. This also increases the feed value of the silage. It was found that the use of molasses as a preservative in making sweet potato vine silage was not necessary.

PROVIDES CAROTENE IN WINTER FEED

Winter roughages are often deficient in carotene (pro-vitamin A). Since sweet potato vine silage is rich in carotene, it is especially valuable as a winter feed in the South. Because sweet potato vine silage is highly palatable, stock will usually eat more roughage on the dry basis when fed both silage and hay, or other dry forage, than when receiving only dry feed. Its slight laxative effect on cattle is especially beneficial when legume hay is not available. Once animals are accustomed to the silage, it is eaten with practically no waste.

HARVESTING VINES

Certain precautions must be taken in harvesting the vines to be used for making silage. First, they must be removed from the field before frost. Second, particular attention must be given during piling and loading vines (if grown on rocky soil) to keep out stones or other hard objects that would damage the ensilage cutter.

* A vine harvester is being developed.

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FILLING THE SILO

The silo can be filled with an ordinary corn ensilage cutter. No special adjustment of the machine is necessary. The vines should be unloaded from the wagon onto a slatted table, and pulled across it in a loose, thin layer. This is to avoid the accidental feeding of stones or other hard objects into the cutter.

Sweet potato vine silage may be made in any type of silo commonly used for making corn silage. Newly harvested vines contain considerably more water than corn when cut for silage. Accordingly, a large amount of liquid will collect immediately after filling the silo. For this reason, facilities should be provided for the drainage of this liquid from the bottom of the silo and away from the immediate vicinity of the silo.

PACKING IMPORTANT

Packing the material by tramping as it is blown into the silo should receive particular attention. The chopped material must be well packed, especially around the edges, to remove the air. This is necessary to prevent spoilage during the curing process. Thorough tramping is of greater importance during the filling of small silos because the pressure developed by the weight of the material is less in these than in the larger silos.

The material in the silo settles rapidly during the first 48 hours. For the most efficient use, the silo should be refilled after this settling takes place. The trench silos should be capped with a layer of straw and soil to weight the surface and keep out the air. A loosely packed and exposed upper layer will quickly spoil and be unfit for stock feed. All silos should be sheltered from rain during the curing and feeding periods. This will require a suitable roof or cover.

WHAT IS GOOD SILAGE

During the curing process, silage undergoes a fermentation resulting in the formation of a considerable amount of acid. A properly cured product possesses a mild aroma similar to sauerkraut, a decidedly acid flavor, and a yellowish-green color. Silage having an odor of rancid butter is inferior in quality and is undesirable. At the time the silo is opened for use, the upper layer may be spoiled to a depth of 3 to 12 inches. When spoiled, it will be black, mushy, and will probably have a bad odor. Such material should be discarded.

Sweet potato vine silage changes rapidly in color from a bright, yellowish-green to a greenish-black upon exposure to air for a period of fifteen minutes or more. This color change is not an indication of spoilage.

DAIRY RATION

When feeding dairy cows sweet potato vine silage, the following daily ration has been found satisfactory: Silage, 30 pounds; grain, 11 pounds; alfalfa hay, about 15 pounds. Three-year feeding trials have shown sweet potato silage to be as good as corn silage in this ration in maintaining body weight and milk production.

When sweet potato vine silage is fed to cows for the first time, they may eat only a small portion of it. For this reason, it may be necessary to accustom the animals to the silage gradually. A few days feeding is usually enough to bring the animals to full feed.

SILO DIMENSIONS DETERMINED BY HERD SIZE

In the southern states plans should be made to feed silage for about five months (150 days) out of the year. The number of animals to be fed will determine not only the amount of silage to be made, but also the dimensions of the silo to be used. After the silo has been opened it is necessary to feed off a layer at least 2 inches thick daily, to prevent molding of the surface layer of the exposed silage.

Sweet potato vine silage weighs about 60 pounds per cubic foot, hence, a ration calling for 30 pounds of silage per animal per day will represent the removal of a layer 2 inches thick and 3 square feet in area. From these figures it is possible to calculate the desired dimensions of the silo to be used for a herd of a given number.

For complete information regarding the various types of silos and their construction, write your State Agricultural Extension Service, or the U. S. Department of Agriculture, Washington, 25, D. C.

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